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GEOGRAPHICAL RECORD

THE AMERICAN GEOGRAPHICAL SOCIETY

EXHIBITIONS BY THE AMERICAN GEOGRAPHICAL SOCIETY AND THE HISPANIC SOCIETY OF AMERICA. On Feb. 9, these Societies opened, in their respective houses, a series of exhibitions illustrating the geography and development of the South American Republics. In the first exhibition our Society showed, on tables and racks, atlases and maps illustrating Chile at various periods. The display of these maps was especially instructive because it showed the different stages of our knowledge of the country and of the distribution of its resources, and the gradual improvement in the efficiency of the map symbolism employed to present a large variety of information. At the same time the Hispanic Society of America had on exhibition a collection of admirable photographs of cities and of many other aspects of Chile.

The simultaneous exhibitions by the two Societies have been continued since then. Maps, atlases and photographs of Mexico were displayed for two weeks beginning on Feb. 16, and the Argentine, Peru and Brazil exhibitions were open for a week each, beginning March 2, March 9 and March 16. The attendance at both Societies has been large. The number of visitors to the exhibition rooms of our Society was 3,261 up to March 16, and much interest has been shown. The exhibitions are open from 10 to 5 o'clock on week days; on Sunday, from 1 to 5 P.M. at the Hispanic Society's house, and from 2 to 5 P.M. at the house of the American Geographical Society.

Some of the more important maps exhibited were:

Mexico: Early maps of the North American continent showing progress of discovery; Humboldt's compilation of 1812, incorporated with the Atlas of New Spain (this map was used as the base of later compilations up to 1860); a large number of sheets of the 1:100,000 map of Mexico published by the Comisión Geográfica Exploradora.

Brazil: General map of Brazil, 1:5,000,000, compiled by the Ministry of Industry and Public Works on the occasion of the National Exhibition of 1908; several state maps and many sheets of the 1:100,000 topographic map of São Paulo.

Argentine: Seelstrano y Tourmente's map, 1:4,000,000, issued in 1875 on the occasion of the World's Fair at Philadelphia; the 1:200,000 cadastral map of the province of Corrientes.

Peru: Raimondi's 1:500,000 map and a scarce manuscript compilation by the same cartographer.

Chile: The sheets of the 1:500,000 map of Chile issued by the Oficina de Mensura de Tierras; also the 1:250,000 sheets of the Argentine and Chilean boundary issued by the Oficina de Limites.

A large number of railroad and economic maps were shown.

MEETING OF THE SOCIETY. A special inter-monthly meeting of the Society was held in the Engineering Societies' Building, No. 29 W. 39th St., on Tuesday, March 11, 1913, at 8.30 P.M. Vice-President Greenough in the chair.

Mr. Greenough introduced the speaker of the evening, Miss Ellen Churchill Semple who addressed a large audience on "Geographic Influences in Japan." Superior stereopticon views illustrated many phases of Miss Semple's able exposition of the large part that geographical environment plays in shaping the life and activities of the Japanese people.

NORTH AMERICA

FROST PROTECTION IN THE UNITED STATES. The question of frost fighting is receiving an increasing amount of attention in the United States for the reason

that frost is likely to do more damage as the area devoted to fruit-growing and to raising other valuable crops is increasing. There are several recent publications which deal with frost protection. Mr. J. C. Alter, of the United States Weather Bureau at Salt Lake City, has made a detailed investigation of the cost of frost fighting in Utah in a discussion of the question, "Does Frost Fighting pay in Utah"? (*Mo. Wea. Rev.*, Vol. 40, 1912, pp. 606-608). Taking into account the cost of labor, fuel, equipment, etc., the following table has been prepared, showing the cost of protection by smudging per acre at the different temperatures given:—

29° - 30°, \$0.60; 28° to 30°, \$1.00; 27° to 30°, \$1.40; 26° to 30°, \$1.80; 25° to 30°, \$2.20; 24° to 30°, \$2.60; 23° to 30°, \$3.00; 22° to 30°, \$3.40; 21° to 30°, \$3.80; 20° to 30°, \$4.20. In other words, for each degree of temperature-fall the cost increases 40 cents per acre.

IRRIGATION AND ALKALI IN THE UNITED STATES. Irrigation has turned thousands of acres of "desert" in the western United States into green fields and orchards. The success which has been attained by farmers and fruit-growers in these reclaimed sections has been so phenomenal that unduly optimistic views regarding the future of the irrigated lands are naturally held by many people. There are many things which ought to be borne in mind. Years of decreased rainfall will surely follow the favorable years which so much of our western country has been enjoying. Then there will be less water available for irrigation. New and unforeseen difficulties have arisen where irrigation is practiced. Weeds, growing abundantly along the canals, drop their seeds into the water, and these seeds are distributed over the orchard or the field. And one of the greatest problems concerns the accumulation of an excess of alkaline salts in the surface soil. This is becoming a very serious difficulty in many sections, and demands immediate and careful attention.

The subject of the alkali in the soils of irrigated areas is clearly and briefly considered by Mr. R. A. Hart, United States Drainage Engineer, in a recent article on "The Relation between Light Precipitation and Alkali" (*Mo. Wea. Rev.*, July, 1912, pp. 1099-1100). The essential facts are these: In the so-called arid regions the precipitation is generally sufficient to leach out the salts in the immediate surface and to carry them down, by percolation, far enough to allow sage-brush, wild grasses, etc., to thrive to a limited extent. Evaporation being excessive, the ground-water table is usually found at a great depth. Now, in irrigation, much more water is used than is really needed. A portion of the excess is lost by evaporation and by surface waste. The remainder moves down through the soil by percolation. This movement leaches out the alkaline salts from the root zone of the soil, and make agriculture possible. But the percolating excess actually fills up the ground-water reservoir, and the water table rises in consequence. In this upward movement of the water table, the concentrated alkaline solution near the upper limit of soil saturation (above the free water level) precedes the water table by a few feet. Therefore, when the ground-water table reaches a plane within the capillary distance of the ground surface, evaporation of this concentrated solution deposits the salts at or near the surface, causing the death of plants. The remedy is to lower the ground-water table to such a depth that capillary action cannot raise water and alkali salts near enough the surface to do damage, and to repeat the original process of leaching out the alkaline salts by using an excess of irrigation water. After that, a "sane" amount of irrigation water should be used. Good underdrainage is the cure for this difficulty.

It is worth noting, in connection with Mr. Hart's paper, that in the Salt River valley of Arizona, irrigated by means of the Roosevelt Dam project, electric power developed at the dam is utilized in the valley for the purpose of reducing the ground-water level by pumping.

R. DEC. WARD.

AGRICULTURE IN ALASKA. The Bureau of the Census has issued a bulletin containing the agricultural statistics for the territory. In 1910 the number of farms was 222, a farm being defined, for census purposes, as a tract of three or more acres used for agricultural purposes, or any tract of less than three acres producing at least \$250 worth of farm products in 1909. The improved land in farms amounted to 2,660 acres. On the farms were 811 cattle, 206 horses, 165 hogs, 184 sheep, 16,566 reindeer, 162 work dogs, and 5,483 chickens. An

important number of domestic animals were also kept on lands not counted as farms. The amount of milk reported for 1909 was 66,386 gallons and the amount of milk and cream sold was 42,282 gallons valued at \$34,063. The number of eggs produced was 17,100 dozens valued at \$29,854. Vegetables were by far the most important crop in 1909. Their total value aggregated \$186,134. The hay and forage crop was valued at \$94,933. Potatoes were produced to the amount of 10,903 bushels.

ASIA

REMAINS IN EASTERN ASIA OF THE RACE THAT PEOPLED AMERICA. Under this title Dr. A. Hrdlička of the U. S. National Museum reports the results of his visit in 1912 to parts of Siberia and Mongolia in search for possible remains of the race that peopled America (*Smithson. Miscell. Coll.*, Vol. 60, 1912, No. 16, pp. 1-5). His studies were restricted to parts of southeastern Siberia and northern Mongolia as far as Urga. Visits were also made to Siberian museums within the area covered for the purpose of seeing their anthropological collections. He saw or had information of thousands of barely touched burial mounds or "kourgans" dating from the present time back to the period when only stone implements were used by man in those regions. The little investigation that has been made of these remains is due chiefly to Adrianov and his colleagues at Minusinsk and especially to Professor Talko-Hryncewitz of Crakow. The mounds yield, according to their age, implements of iron, copper, bronze or stone, occasionally some gold ornaments and skeletons. The majority of these "kourgans" date doubtless from fairly recent times, corresponding to Ugrian or Turk or "Tatar" elements and to the modern Mongolian, and the skeletons found in them show mostly brachycephalic skulls, some of which resemble quite closely American crania of the same form. The older "kourgans" on the other hand particularly those in which no metal occurs yield an increasing number of dolichocephalic crania, in which close resemblances with the dolichocephalic skulls of the American Indians are very frequent. To what people these older remains belong is as yet an unanswered question; but in some localities as on the lower Yenisei there are to-day remnants of native populations among whom dolichocephalic individuals are quite common, and they often bear a most remarkable physical resemblance to the American Indian.

Dr. Hrdlička also saw many Buriats, representatives of tribes on the Yenisei and Abacan Rivers, many thousands of Mongolians as well as Tibetans, Chinese and Manchurians. Among all these people, but especially among the Yenisei Ostiaks, the Abacan Katchinci and related groups, the Selenga Buriats, the eastern Mongolians, the Tibetans, the east Siberian Oroczs and the Sachalin Giliaks there are many unmistakable traces of admixture or persistence of what appears to have been the only population of these regions. They resemble to the point of identity American Indians of corresponding head form, they are brown in color, have straight black hair, dark brown eyes and facial as well as bodily features which remind one forcibly of the native Americans.

Dr. Hrdlička found more evidence in this direction than he had hoped for. He says the physical resemblances cannot be regarded as accidental. "The writer feels justified in advancing the opinion that there exist to-day over large parts of eastern Siberia, and in Mongolia, Tibet, and other regions in that part of the world, numerous remains, which now form constituent parts of more modern tribes or nations, of a more ancient population (related in origin perhaps with the latest paleolithic European), which was physically identical with and in all probability gave rise to the American Indian." He has satisfied himself that the field for anthropological and archæological research in eastern Asia is vast, rich, to a large extent still virginal, and probably not excessively complicated.

INDIAN RAINFALL. With the extension of irrigation works and of various commercial undertakings which depend upon rainfall in India, the demand for reliable information regarding the maximum amount of rain to be expected within short periods has been increasing. To meet this natural and legitimate demand, the Indian Meteorological Department has issued a *Memoir* (Vol. XXI., Pt. II, of the *Memoirs of the Indian Meteorological Department*), prepared by

Dr. Gilbert T. Walker, the Director-General of Indian Observatories, in which all the available data are concisely summarized. The information is divided into two parts. The first part concerns heavy rainfalls extending over a day or more, and contains, in chronological order, the data of all daily falls of rain exceeding 10 inches in each of the chief political divisions into which India was divided during the closing years of the period covered, *viz.*, 1891-1911. The available records, collected from fragmentary sources previous to 1891, are also included. A fact of importance, usually neglected, is the question whether a heavy fall of rain was preceded or followed by heavy rainfall. Dr. Walker has wisely included such data in his tables. The second part includes data concerning bursts of heavy rains lasting not longer than a few hours. The whole matter of Indian rainfall is unusually interesting, and the present discussion adds greatly to our available information on this subject.

R. DEC. WARD.

POLAR

STEFÁNSSON'S NEXT EXPEDITION. In February, the Canadian Government made an offer to Mr. Stefánsson to assume the responsibility of providing all the funds needed for his next Arctic expedition, the whole enterprise to be a governmental matter. The government of Canada assumed the position that as Stefánsson's work was to be carried out in Arctic areas claimed by the Canadian Government it was more suitable that the expedition should sail under the flag of that country.

The American Museum of Natural History and the National Geographic Society had already agreed to give liberal support to Mr. Stefánsson's further work, but they yielded the rights they had acquired in his enterprise, and the expedition will go north entirely under the auspices of Canada. Mr. Stefánsson's plans have not been materially changed by the fact that the Dominion of Canada will be the financial supporter of his work.

The American Museum Journal (Vol. 13, 1913, No. 2, pp. 55-56) gives an outline of the explorer's intentions. The chief aim of the expedition will be geographical and anthropological exploration. As planned, the expedition will have two main bases, the northern one on Prince Patrick Island and the southern on the mainland of North America near Coronation Gulf. Mr. Stefánsson will give personal attention to geographical exploration and the study of the Eskimo. Dr. Anderson will conduct the biological investigations. It is expected that a staff of at least six scientists will accompany Mr. Stefánsson, Dr. Anderson being one of the number.

In general, the plan is to spend three or four years in an intensive study of the archæology and ethnology of the Eskimo, together with the zoology and geology of the whole region from Alaska to Coronation Gulf; also, to map the unexplored coasts of Victoria and Prince Patrick Islands and by off-shore journeys to the north and east determine by means of soundings the extent of the continental shelf and discover new lands, if such there be. It is intended that the expedition shall be a scientific one and devote its energies to the investigation of this unknown region.

The anthropological work is to be made a special feature, the main problem here being to determine the present and former limits of human occupation. During summer the surface will be searched for traces of former villages which, when found, will be carefully studied by excavation and otherwise to determine their relative ages and the cultural character of their occupants. Such archæological work is now needed to estimate the period of occupation and the direction of Eskimo migration.

In the east, special attention will be given to the distribution of the peculiar hybrid Eskimo discovered on the last expedition. It is intended that a full census of the people be made, noting the somatic character of each to serve as a basis for the study of this peculiar biological problem.

ICEBREAKERS STOPPED BY ICE AT THE TAIMYR PENINSULA. Two Russian icebreakers, the *Taimyr* and the *Vaigach* left Petropavlovsk, the Russian Bering Sea port in southern Kamtchatka, passed Cape Deshnev, the most eastern point of Asia, July 22 and pushed westward along the north coast of the continent. They reached the mouth of the Lena River on Aug. 25, taking soundings and making surveys of the North Siberian coast on the way. Depths of about fifteen

feet were found in the Lena Delta. The vessels went on westward intending, if possible, to steam along the coasts of the Taimyr Peninsula, the most northern region of Asia, but they were finally stopped by impassable ice. They found the coast waters shallow, the temperature fell to minus 9° C and though the attempt to proceed was renewed on Sept. 6 it was impossible to advance beyond 76° N. The vessels therefore turned east again and reached Petropavlovsk safely on Oct. 1. (*Pet. Mitt.*, Band 58, 1912, Dec.-Heft, p. 348).

DISASTER OVERTAKES LIEUT. SCHRÖDER-STRANZ'S ARCTIC EXPEDITION. This expedition went to Spitzbergen last year to acquire some Arctic experience before entering upon its more serious purpose of making the Northeast Passage. Its leader expected to return in the fall but the Arctic winter set in earlier than usual and he was unable to return south. *Petermanns Mitteilungen* (Nov., 1912, p. 285) reports that early in January the Norwegian station in Spitzbergen sent a wireless message to Christiania saying that the expedition had been most unfortunate. Captain Ripschel, who commanded the little vessel *Herzog Ernst* that took Lieut. Schröder-Stranz's party north, arrived on foot at Advent Bay on the west side of Spitzbergen on Dec. 27, in a miserable condition. He said he had left the oceanographer Dr. Rüdiger at Wijde Bay and three others at Cape Petermann, exhausted with cold and hunger. The *Herzog Ernst* was frozen in at Treurenburg Bay but can probably be taken out next summer. Lieut. Schröder-Stranz had left the ship on a sledging expedition in August and had not since been heard from. There is some hope that his party may have reached the station at Cross Bay. If he did not, his position was certainly precarious for his supplies were very inadequate and an outbreak of scurvy was reported. A relief party started from Advent Bay upon Captain Ripschel's arrival there.

PHYSICAL GEOGRAPHY

MAGNETIC SURVEY WORK OF THE DEPARTMENT OF TERRESTRIAL MAGNETISM IN 1912. The report of the field work of the Department during the fiscal year Nov. 1, 1911-Oct. 31, 1912 appears in abstract in the *Year Book* of the Carnegie Institution of Washington, 1912, pp. 214-215. At the end of October, 1911, the *Carnegie* had completed her circumnavigation cruise as far as Batavia, Java. She sailed on Nov. 21, 1911 for the eastern Indian Ocean and thence to Manila, where she arrived on Feb. 3, 1912. The total distance covered on this leg of the cruise was 8,292 miles. The cruise continued from Manila to Suva, Fiji; thence to Papeete, Tahiti, and Coronel, Chile, where the *Carnegie* arrived on Nov. 24, 1912. The circumnavigation cruise will be completed by the end of 1913. The total distance covered during the period indicated was about 28,000 nautical miles. The magnetic declination was determined at 260 points and the magnetic dip and intensity at 180 points. The *Carnegie* left Talcuahuano, Chile, on Dec. 18, and arrived at Stanley, Falkland Islands, on Jan. 27, 1913, having had a good passage in rounding the Horn.

The errors in the charts of the lines of equal magnetic declination used by mariners in the eastern part of the Indian Ocean reached nearly the same magnitude as those found in the western part of this ocean, viz., 3° to 5° , according to the chart used. The chart errors in magnetic declination in the China Sea and in the Pacific between Manila and Suva were, however, usually less than 1° . Between Suva and Tahiti the chart errors amounted to nearly 2° . The maximum errors in the charts of the lines of equal magnetic inclination and of equal horizontal intensity were as follows: Eastern part of the Indian Ocean, 3.5° in magnetic dip, and one-thirtieth part in the horizontal intensity; in the China Sea 1.5° in magnetic dip, and one-fortieth part in horizontal intensity; in the Pacific Ocean between Manila and Suva, 3.5° in dip and one-fourteenth part in horizontal intensity, and between Suva and Tahiti, nearly 8° in magnetic dip for one of the charts and about one-thirtieth part in horizontal intensity. The chart errors appear to be largely due to imperfect knowledge of the corrections to be applied if past observations are to be brought up to date.

The land work during the period was chiefly in Africa, Asia, Australia and South America. The chief expeditions were by Dr. C. K. Edmunds in southern China, French Indo-China and Siam; by Mr. E. Kidson in western and central Australia including an overland trip 1,100 miles by caravan from Oodnadatta

in South Australia to Pine Creek, thence by rail to Port Darwin on the north coast of Australia; by W. H. Sligh in Tripoli, Tunis, Algeria and Morocco and from the Canary Islands by small boat along the coast of Rio de Oro and Mauretania to St. Louis, Senegal; by D. W. Berky in Morocco, Sierra Leone and French Guinea (on October 29, a Trans-Saharan Expedition led by Berky accompanied by H. E. Sawyer left Biskra, Algeria, for Timbuktu); by J. P. Ault's party in Peru, Bolivia and Chile. A series of stations has now been completed across South America from Para at the mouth of the Amazon to the Pacific at Callao, Peru, via the Amazon and Ucayali Rivers and Lima. The three magnetic elements were determined during the fiscal year at 235 land stations.

PERSONAL

ROLLIN T. CHAMBERLIN. Dr. Rollin T. Chamberlin of the University of Chicago recently lectured on his visit to Brazil, before the Geographical Society of that city.

N. H. DARTON. This well-known geologist of the Bureau of Mines, Washington, recently gave two lectures on applied geology to the advanced geological students at Columbia University. His topics were "Construction of Structure Maps of Coal Basins" and "Construction of Maps Showing Artesian Water Conditions."

V. STEFÄNSSON. Mr. Stefänsson sailed for Europe in March to lecture before the Royal Geographical Society and to attend the meeting of the Tenth International Geographical Congress at Rome.

OBITUARY

BENJAMIN LEIGH SMITH. This explorer, noted for his work in Franz Josef Land, died in Hamstead, England, on Jan. 4. He was the first to land in the archipelago after the Austrian expedition under Payer and Weyprecht discovered it in 1873. In 1879, De Buyné sighted high land in the Franz Josef Land region but otherwise it remained untouched until Leigh Smith in his yacht *Eira* explored the whole southern coast from 42° to 54° E. in 1881 and 1882, discovering many islands and sounds and ascertaining that the coast of Alexandra Land in the extreme west trended to the northwest and north. His enterprises were wholly at his own expense and were fruitful in geographical results.

CORRESPONDENCE

THE HEIGHT OF TERAM KANGRI

TO THE EDITOR OF THE BULLETIN. *Sir:* In the *Bulletin* of the American Geographical Society, Dec. 1912, in my notes of the Siachen Glacier (p. 900), there is a foot-note saying that the Indian Survey gives the height of Teram Kangri as 27,610 feet. This is not correct. In 1909 Dr. T. G. Longstaff measured by clinometer a peak which he supposed to be the highest of the group as 27,610 feet. In 1911 the Indian Survey triangulated from four stations another summit of the group which is the actual highest one, with result for altitude of 24,489 feet. In 1912 my topographer, C. Grant Peterkin, triangulated the same peak and the result was 24,510 feet. On my map the height of Teram Kangri will be placed at 24,510 feet as Mr. Peterkin, being in the immediate vicinity, had every chance for an accurate triangulation. Teram Kangri is not the highest peak on the Siachen Glacier, there being three higher ones as you will see by my new map when published.

FANNY BULLOCK WORKMAN,
Bombay, Feb. 18, 1913.